

ZGRASS-32 AND THE CONSUMER MARKET

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Market Segments Affected in Probable Order of Penetration

1. Computer Hobbyists

The current owners of Bally Arcades who wish to upgrade to Zgrass form the most certain first market. These people have been waiting two years and remain faithful beyond any reasonable expectation. The only conclusion is that we have the best product for their needs.

The hobbyist, in most advanced stages, wants to be able to tinker with the hardware and software. Zgrass-32 (when suffixed with "-32", I mean the "Add-on", when alone, I mean the language) is connected to the Arcade via the DNA Bus which is easily tapped by third party hardware people given details of the signals. CURSOR (the users' group magazine) is probably the best place to disseminate such information.

Zgrass as software allows essentially infinite tinkering with none of the possible damage to the machine that hardware modification risks. The Assembler will allow one to write commands to extend the system yet use internal routines efficiently.

Some marketable software/hardware will come from hobbyists, but the majority will come from professionals who understand subject areas, a group the consumer computer industry has not courted so far.

Hobbyists will be good consumers of equipment, sadsets and game-oriented software tools. They represent a market that can be deeply penetrated but saturated in a few years.

Hobbyists are also clearly ready to dump BASIC. PASCAL is the only commercially available alternative, and currently the darling by default. It is clear that personal computing requires highly interactive interpreted languages, of which Zgrass, LOGO and Smalltalk are examples, all graphics languages. The esthetics of graphics are of such importance that interaction during programming is necessary. PASCAL's emphasis on "getting it right the first time" just doesn't work for esthetic matters. Zgrass allows quick tunings of programs by successive approximation, thus encouraging experimentation and effects not worth the bother in other languages. The fact that a personal computer is bought, not leased or charged connection time, means that the emphasis can shift from computer efficiency to human productivity.

2. Hobbyists in Related Areas

This is, by and large, an untouched area. Zgrass-32 is the only system with a keyboard that is fully compatible with video equipment, notably VCR's (Betamax and VHS, for example). Zgrass is also ideally suited for Super-8 film animation and titling since it allows programmable frame advance control for time-lapse filming. Our price-point is about the same as VCR's and consumer color TV cameras and good Super-8 equipment. The number of persons seriously

into amateur filmmaking and video is staggering and much larger than the computer hobbyists.

3. The Consumer-Short Term

The consumer, by definition, is supposed to consume, that is, get tired of hardware and software and buy more. Forces of social consciousness and the economy are changing this attitude significantly so it is possible to conceive of consumers who will do more than play games. Learning, for one, is not normally considered a consumer activity for adults (kids, of course, love learning toys and parents love to buy them). Learning about computers given the intense visual feedback of Zsrass-32 is enough fun to be a sort of game. In fact, for some people, it has the fascination of gambling, of beating the system of some defined universe of play.

Many adults want to become computer literate and are willing to buy a computer to lean on. Zsrass has the very marketable advantage of having a computer-assisted instruction package for teaching itself to the absolute novice. (Beware other manufacturers who claim self-teaching, they are referring to mini-text books like the book with BALLY BASIC.) In truth, Zsrass is the only system ever designed to support computer-assisted instruction of itself. Combined with the fascination of beautiful visuals easily achieved and we have a very attractive product. The conclusion is that finding people who want to program in Zsrass is going to be a lot easier than heretofore thought.

4. The Consumer-Long Term

Computer systems suffer from chicken-and-egg startup problems. Apple II is a great success because of the wealth of third-party software available. Apple III, on the other hand, is in serious trouble because the current unavailability of software means no one will buy the hardware means no third party people will invest in writing software for it. Zsrass will not suffer from this fate because:

- a. As with Apple II, we will bootstrap from the hobby market. We are starting out with a large number of Arcade owners who are basically captive, an advantage Apple never had.
- b. We are supporting considerable third-party software development (details below) before the introduction of the product.
- c. Zsrass-32 is so applicable to education that we can deeply penetrate the schools. Zsrass is at once a delivery system and a publication medium for computer-assisted instruction, all of which would be available in the home as well. Apple has the Apple Educational Foundation which has worked well. I suggest a similar investment of equipment aimed at supporting promising school and university projects. It is good business and good publicity.
- d. Zsrass is already getting good press. Zsrass-32 is an exciting product and the magazines are picking up on it. We should approach Popular Science and Popular Mechanics and distribute cover art for related POP publications. A technical press package should be

developed.

Thus, the vast consumer marketplace can be tapped. We offer a machine with the power of the Apple with much better graphics, at a lower price. The consumer who wants to use the computer as an information retrieval device will be able to:

a. Dial into database networks. Currently, these are character and number based. Zgrass will cause the creation of picture data retrieval systems, a consumer concept of far greater potential than text-only systems. Zgrass will become the first of the super-viewdata systems.

b. Access videodisc-coded materials. A single videodisc can hold several hundred thousand Zgrass images, more text than an encyclopedia, and considerable high-quality audio information at a materials cost of fifty cents a disc. A suitable interface can be added to a Zgrass unit to decode and mix videodisc signals, a benefit of our NTSC TV compatibility not offered by other consumer units. Part of the slowness of the videodisc market has been attributed to scarcity of intelligent applications. Zgrass and videodiscs are a natural together.

Clearly, the key to consumer use is visuals. Even highly educated people are better processors of visual information than they are of text and numbers. Zgrass-32 has the best potential for visual information in motion, that is, animation, of any system available. The best any other manufacturer can offer now is random access to information. We can make it move as well!

5. The Education Market

Much of Apple II's success has been in inspiring educational use. The TRS-80 has gained wide acceptance for teaching introductory BASIC programming in high schools. Zgrass, if well marketed, can deeply penetrate these markets for the following reasons:

a. Zgrass was designed to teach programming interactively (as was BASIC, of course). However, Zgrass can be used to teach other subjects, a major growth area in the schools and at home. BASIC, as available on the Apple, Atari and Mattel equipment is good for teaching simple programming skills, just as BASIC is. Other educational software available on these machines, except for a few demos, remains at the conceptual complexity of flash cards. Remember that BASIC was designed to give students the interactive access to what is now the power of a programmable pocket calculator long before such things existed. Whereas BASIC is limited to trivial computer-assisted instruction, Zgrass has the text and picture handling capabilities to teach in sophisticated ways.

b. Zgrass was designed to give educators and artists access to a medium. The other currently popular language, PASCAL, was designed to teach computer

science to computer science students, a very different goal. PASCAL is a rigorous, unforgiving language, poor for people whose expertise is in other areas than computer science. It is a mistake to limit courseware development to computer scientists. If anything is more important to courseware developers than hardware, it's software.

Once the education market is somewhat penetrated, the schools become the best high-level justification for home purchase. Parents will buy hardware and courseware to help their kids get ahead. It is a fantastic market that is currently frustrated by the poor quality of existing hardware and software. Apple is getting out of this market, fearing competition from below and realizing they could only skim the top with the Apple II hardware. Apple, of course, never considered the Apple II a consumer machine.

4. Third-Party Software

Our chief competition comes from Atari and Mattel, given the showings at CES. These two manufacturers are not addressing the third-party software issue intelligently in that they offer only a simple BASIC as the way to get at the compute/graphics power of their hardware. BASIC is a wholly unacceptable medium for the person who wants to invest time and energy in providing software for consumers.

Business computer manufacturers have long realized that unbundling software and hardware is good practice. The best application software generally comes from third-party sources. Apple also realized this, being a hobby company at first. There are several differences between the Apple II concept and the consumer computer, namely:

- a. Apple requires disk systems to distribute software effectively. Disks are necessary for program development by authors but can be replaced by cartridges for consumer distribution. Apple cannot accept cartridges; Z8800 does. Cartridges cannot be easily copied as disks can, a very important point for third-party people who cannot, in general, afford to pursue copyright infringement. Cartridges have no maintenance problems and no hardware investment. Disk systems cost at least \$500 and are, by an order of magnitude, the component most needy of maintenance. Thus, Z8800 is much more applicable to teaching use since it does not require a disk for delivery of educational materials.

- b. Apple provides several languages, a benefit for those who wish to emulate in a limited sense, a small mini-computer. Mattel and Atari have only a limited BASIC. Z8800, via external hardware attached to the DNA Bus could support CP/M and the languages it has (FORTH, FORTRAN, PILOT, etc.) for the segment of the market that wants them. Word processing, BASIC, FORTH, LOGO, LISP, PILOT, and a few other languages could be supported within Z8800 by simply plugging in a cartridge developed by us or third-party vendors. Z8800, of course, was developed specifically for courseware development and delivery, and provides a

framework for extension that largely obsoletes most other languages, except in the large scientific or business applications for which they were designed, and we are not in competition.

c. Apple sells mainly in computer stores, places that most consumers are afraid to enter. We can sell through department stores and mail-order houses with better history of consumer satisfaction.

d. Apple II's graphics are difficult to do and are not suitable for animation. All video games do animation well. Our advantage is that Zgrass allows access to this capability for third-party development; Mattel and Atari do not.

The idea here is obvious: to combine the best of Apple with the best of the games/animation technology and make it accessible to any motivated person.

One can, of course, do third-party software in BASIC. The problem with BASIC is that a plateau is reached too soon and the cleverness invested in settings around BASIC's shortcomings crowds out the application.

In summary, the attractiveness of Zgrass to third-party software vendors is due to:

a. Our support with software tools to help program development. A special package is being put together to accelerate the development of programming expertise in Zgrass and provide commonly used routines for constructing and animating images, judging answers to questions, and word processing.

b. Zgrass's interactivity and advanced debugging tools makes it very easy to develop and test software. This means that professionals without degrees in computer science can generate and sell software, and that good programmers can do complex applications much faster. Lowering the cost and development time of software is the most important concept behind Zgrass. It will result in better quality software with higher margins than with systems allowing only BASIC and machine code.

c. Zgrass's extensive set of graphics functions. The third party developer does not have to code the graphics algorithms. A similar argument applies to the text manipulation features of Zgrass. No BASIC or other language available on a consumer computer has these advanced functions available.

d. The fact that cartridges can be produced for mass distribution to schools, businesses, etc., which eliminates the need for disk-based delivery systems. Zgrass-32 is the only system making this feature available to third party developers. For smaller distributions, special audiotape loading modes are available.

e. The modularity of Zgrass. Modularity allows one to invest time in sharable program modules that can be used in a variety of applications. Modularity is not possible in BASIC and cumbersome in Apple PASCAL. The ability to construct good software tools is the first

7. Additional Markets

Trainings is a large, relatively untouched marketplace for personal computer-assisted instruction. Although schools and universities are experiencing budget difficulties and computers are capital expenses, the industrial training market works on very different economic levels. A Zgrass-32 machine now costs no more than a single week of conventional trainings when all factors are considered. The students are highly motivated and captive, and the courseware development budgets and evaluation procedures are real.

Trainings is a different marketplace, though, and needs a different strategy. Industrial trainers are not likely to purchase hardware and courseware from department stores. Groups like DELTAK in Chicago should be approached when the time comes. Good marketing of the Zgrass features will, of course, attract the attention of people who develop and sell instruction to large companies.

Another good market is in-store displays. Since the graphics of Zgrass is so applicable to animation, a Zgrass-32 computer with cartridges can be used to sell a product or be part of a window display controlling several large TV's. Voice synthesizers and voice recognition hardware and be adapted via the RS-232 connectors on the Zgrass unit and controlled with cartridge-loaded software. A Zgrass-32 Demo cartridge will be produced to sell the unit, of course, and this technique will extend to other communications as well.

One thing is for certain: given the general-purpose tool that Zgrass-32 is, the uses that people will find for it, particularly revenue-generating ones, will continue to surprise us for several years to come.

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